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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,100	02/26/2002	Martin Smith	476-2095	5437
23644	7590	08/25/2005	EXAMINER	
BARNES & THORNBURG P.O. BOX 2786 CHICAGO, IL 60690-2786			NGUYEN, THUAN T	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/083,100	SMITH ET AL.
	Examiner	Art Unit
	THUAN T. NGUYEN	2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-25 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10/01/02 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, and 11-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rudrapatna (U.S. Patent 6,801,790 B2 or “Rud” for short) in view of applicants’ admitted prior art.

Regarding claims 1 and 20, Rud discloses “a radio communications device comprising at least three diverse antennas and one of a plurality of transmit chains or a plurality of receive chains, and wherein there are fewer of said chains than antennas” (Fig. 1 with a plurality of antennas are more than transmit or receive chains using signal paths 130, 132, 134 or 136, with groups of antennas 102, 104, 106, 108, 112, 114, 116, and 118, see col. 4/line 49 to col. 5/line 24 & col. 6/lines 18-49).

Rud might not disclose “said antennas being arranged to have diversity with respect to one another” and “fewer of said chains than activated diverse antennas” as recently amended;

however, a prior art of figure 2a admitted by the applicants on page 9, lines 21-28 teaches this technique of arranging antennas having diversity with respect to one another and fewer of receive chains than the active diverse antennas. Therefore, it would have been obvious to one of ordinary skill in the art to modify Rud's system with an admitted prior art in having antenna arrangement in a manner to have diversity with respect to one another and fewer of receive chain than activated diverse antennas order to have the receive antennas are diverse the effects of multipath fading are reduced as taught by the admitted prior art of figure 2a.

For claim 2, Rud discloses "which is arranged to provide multiple-input multiple-output communications" (MIMO, see col. 4/lines 5-48).

For claims 3 and 4, Rud discloses "wherein said antennas each have directionality" and "wherein said at least three diverse of the antennas have one of spatial diversity and polarisation diversity" (col. 3/lines 25-44 & col. 4/lines 48-62).

For claim 5, Rud discloses "which is selected from a base station and a user terminal" (col. 1/lines 5-50 as this technique is for use within MIMO in UMTS system for mobile stations and base stations, see col. 6/lines 2-15).

For claims 6-7, Rud discloses "further comprises a selector arranged to select for each chain, one of said antennas for use in conjunction with said chain"; "wherein said selector comprises a switching mechanism arranged to switch the antennas between said chains" (col. 6/lines 17-49 for switching and selector mechanism or control 128 with switches 120, 122, 124, 126).

For claims 11-12, in view of claim 6, Rud further discloses “wherein said selector is arranged to select on the basis of a signal strength indicator” and “which is arranged to provide multiple-input multiple-output communications and where said selector is arranged to select on the basis of parameters related to any one of a frame error rate, link capacity and eigenvalues” (col. 6/line 50 to col. 7/line 64 for parameters including signal strengths and/or link capacity based on frequency content, amplitude, phase, code etc.).

For claims 13 and 21, Rud shows “wherein each of said antennas is arranged to provide a directional antenna beam and wherein at least some of said antenna beams are of substantially different pointing directions than others of said antenna beams”, i.e., mixed or variety of antennas are used for directions, and one can be substantially different than the others (col. 3/lines 25-64).

For claims 14 and 15, Rud shows “comprising four pairs of antennas each pair of antennas being supported from a body which is sized and shaped such that it is portable and suitable to be supported on a substantially flat surface” and “wherein said body is a parallelepiped and each pair of antennas is supported from a different face of said parallelepiped” (Fig. 1, and col. 4/line 49 to col. 5/line 24 for four pairs of antennas addressed, which all four pairs stand on a flat surface as shown in vertically upward direction).

For claim 16, Rud discloses “wherein said antennas are dipoles” (col. 5/lines 11-24).

For claim 17, Rud shows “wherein one of each pair of dipoles is arranged such that its ends are directed towards the body” (Fig. 1, and col. 5/lines 8-24).

For claims 18-19, Rud discloses “comprises a selector arranged to select a first subset of the antennas for transmission and a second subset of the antennas for reception” and “which is

suitable for use in a multiple-input multiple-output communications system and where the first subset is two of the antennas and the second subset is four of the antennas" (col. 5/line 25 to col. 6/line 49 for MIMO, either reception or transmit chain for a first group and a second group of antennas, a subset of four antennas is clearly shown).

Regarding claims 22-24 and 25, these claims for "a method of operating a radio communications device which comprises at least three diverse antennas and one of a plurality of transmit chains or a plurality of receive chains, and wherein there are fewer of said chains than antennas, said method comprising the steps of: i) selecting, for each chain, one of the antennas for use in conjunction with said chain" and "a computer program stored on a computer readable medium and arranged to carry out the method of claim 22" are rejected for the reasons given in the scope of claims 1 and 11-12 as already disclosed in details above.

As for claim 22, Rud might not disclose "said antennas being arranged to have diversity with respect to one another" and "fewer of said chains than activated diverse antennas" as recently amended; however, the examiner takes an official notice that this is a prior art of figure 2a admitted by the applicants on page 9, lines 21-28. Therefore, it would have been obvious to one of ordinary skill in the art to modify Rud's system with an admitted prior art in having antenna arrangement in a manner to have diversity with respect to one another and fewer of receive chain than activated diverse antennas order to have the receive antennas are diverse the effects of multipath fading are reduced as taught by the admitted prior art of figure 2a.

4. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rudrapatna (U.S. Patent 6,801,790 B2) in view of Gesbert (US Pub 2002/0056066 A1).

Regarding claim 8, Rud does not mention “wherein said selector is arranged to select on the basis of a parameter related to a cyclic redundancy check process”; however, Gesbert teaches in a communication system, signal transmission quality or parameters can be keeping track by evaluating BER or PER -packet data error rate- by applying a cyclic redundancy check (CRC) (Gesbert, page 5, par. 0056). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rud’s system with a known technique as CRC check in order to select parameters as desired. For claims 9 and 10, Rud shows “wherein said selector is further arranged to select for each receive chain one of the antennas not currently selected for use in conjunction with other of the said receive chains” and “wherein said selector is further arranged to select for each transmit chain one of the antennas not currently selected for use in conjunction with other of the said transmit chains” (col. 7/line 20 to col. 8/line 48 as switches and control 128 controls the switching for other transmit or receive chain being activated alternatively based on steering, and other evaluating parameters as noted earlier).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to the New Central Fax number:

(571) 273-8300, (for Technology Center 2600 only)

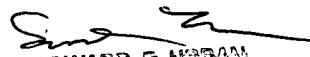
Hand deliveries must be made to Customer Service Window,
Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Thuan Nguyen whose telephone number is (571) 272-7895. The examiner can normally be reached on Monday-Friday from 9:30 AM to 7:00 PM, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tony T. Nguyen
Art Unit 2685
August 16, 2005


EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2620